

WHAT IS CLAIMED IS:

sub C41

1. A simulating apparatus comprising:  
modeling means for creating a model of a physical  
5 environment in a computer database;  
first body sensing means, disposed in close proximity  
to a part of a first body, for sensing the physical status of  
the first body part relative to a first reference position;  
second body sensing means, disposed in close  
10 proximity to a part of a second body, for sensing the physical  
status of the second body part relative to a second reference  
position;  
first body emulating means, coupled to the first body  
sensing means, for creating a first cursor in the database, the  
15 first cursor emulating the physical status of the first body  
part;  
first integrating means, coupled to the modeling  
means and to the first body emulating means, for integrating  
the first cursor with the model;  
20 second body emulating means, coupled to the second  
body sensing means, for creating a second cursor in the  
database, the second cursor emulating the physical status of  
the second body part; and  
second integration means, coupled to the modeling  
25 means and to the second body emulating means, for integrating  
the second cursor with the model.

2. The apparatus according to claim 1 further  
comprising first model display means for displaying a view of  
30 the model.

3. The apparatus according to claim 2 wherein the  
first model display means includes view changing means for  
changing the view of the model in response to a change in the  
35 physical status of the second cursor in the model.

4. The apparatus according to claim 3 wherein the  
second cursor includes a first optical axis which moves

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together therewith, and wherein the view of the model produced by the first model display means corresponds to the view taken along the first optical axis.

5                    5.    The apparatus according to claim 4 wherein the first model display means displays the first cursor together with the model when the first optical axis faces the location of the first cursor.

10                   6.    The apparatus according to claim 5 wherein the first cursor depicts the <sup>first</sup> body part being emulated.

15                   7.    The apparatus according to claim 1 wherein the model includes a virtual object, and further comprising first object manipulating means, coupled to the first body emulating means, for manipulating the virtual object with the first cursor in accordance with corresponding gestures of the first body part.

20                   8.    The apparatus according to claim 7 further comprising second object manipulating means, coupled to the second body emulating means, for manipulating the virtual object with the second cursor in accordance with corresponding gestures of the second body part.

25                   9.    The apparatus according to claim 8 further comprising first model display means for displaying a view of the model.

30                   10.   The apparatus according to claim 9 wherein the first model display means includes view changing means for changing the view of the model in response to a change in the physical status of the second cursor in the model.

35                   11.   The apparatus according to claim 10 wherein the second cursor includes an optical axis which moves together therewith, and wherein the view of the model corresponds to the view taken along the optical axis.

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12. The apparatus according to claim 11 wherein the first model display means displays the first cursor together with the model when the optical axis faces the location of the first cursor.

13. The apparatus according to claim 12 wherein the first cursor depicts the <sup>first</sup> body part being emulated.

14. The apparatus according to claim 13 wherein the first model display means displays the second cursor together with the model when the optical axis faces the location of the second cursor.

15. The apparatus according to claim 14 wherein the second cursor depicts the <sup>second</sup> body part being emulated.

16. The apparatus according to claim 15 further comprising second model display means for displaying a view of the model, the view of the model changing in response to the physical status of the first cursor in the model.

17. The apparatus according to claim 16 wherein the first cursor includes a second optical axis which moves together therewith, and wherein the view of the model produced by the second model display means corresponds to the view taken along the second optical axis.

18. The apparatus according to claim 17 wherein the second model display means displays the second cursor together with the model when the second optical axis faces the location of the second cursor.

19. The apparatus according to claim 18 wherein the first body part is a part of a body of a first human being.

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20. The apparatus according to claim 19 wherein the first model display means comprises a first head-mounted display.

5 21. The apparatus according to claim 20 wherein the first head-mounted display comprises:

a first display for displaying the model to a first eye; and

10 a second display for displaying the model to a second eye.

22. The apparatus according to claim 1 wherein the first and second displays together produce a stereophonic image.

15 23. The apparatus according to claim 21 wherein the first head-mounted display further comprises:

a first audio display for displaying a sound model to a first ear; and

20 a second audio display for displaying the sound model to a second ear.

24. The apparatus according to claim 21 wherein the first and second displays display the model as a series of image frames, and wherein the model display means further comprises frame synchronization means, coupled to the first and second displays, for synchronizing the display of the series of frames to the first and second displays.

30 25. The apparatus according to claim 19 wherein the second body part is a part of a body of a second human being.

Sub C5 26. A simulating apparatus comprising:

35 a modeling means for creating a virtual world model of a physical environment in a computer database;

a first sensor for sensing a first real world parameter;

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first emulating means, coupled to the first sensor for emulating a first virtual world phenomenon in the virtual world model;

5 a second sensor for sensing a second real world parameter; and

second emulating means, coupled to the second sensor, for emulating a second virtual world phenomenon in the virtual world model.